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Crowdsourcing Public Perceptions of Plastic Surgeons: Is There a Gender Bias?

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Background: Implicit gender bias may result in lower wages for women, fewer leadership positions, and lower perceived competence. Understanding public and patient gender preferences for plastic surgeons may enable opportunities to address public perceptions. This investigation evaluates public preferences for a plastic surgeon's gender or demeanor.

Methods: Members of the Amazon Mechanical Turk crowdsourcing platform read 1 of the 8 randomly assigned scenarios describing a hypothetical situation requiring a plastic surgeon to operate on their mother. The scenarios differed only by surgeon gender, surgeon demeanor ("agentic," traditionally more masculine versus "communal," traditionally more feminine), or type of surgery. Using a Likert scale, respondents indicated their agreement with 7 statements on surgeon competence, skills, leadership qualities, likeability, respect, trustworthiness, and, ultimately, preference as a surgeon. Independent *t* tests were used to compare scores. Lower scores indicated a more negative response.

Results: Overall, 341 responses were received: 55.7% were male and 45.5% white. There were no significant differences in any of the 7 characteristics assessed when examining by surgeon gender, only. However, female surgeons with a communal demeanor were perceived as less competent (4.32 versus 4.51, $P = 0.018$) and less skilled (4.36 versus 4.56, $P = 0.019$) than agentic female surgeons. Male respondents rated female surgeons lower than male surgeons in terms of competence ($P = 0.018$), skills ($P = 0.034$), likeability ($P = 0.042$), and preferred choice as a surgeon ($P = 0.033$).

Conclusions: Women plastic surgeons' demeanor and respondent gender affected perception of certain characteristics. Women plastic surgeons may consider ways to engage with the public to address possible gender role stereotypes. (*Plast Reconstr Surg Glob Open* 2018;6:e1728;doi: 10.1097/GOX.0000000000001728; Published online 16 April 2018.)

INTRODUCTION

Gender disparity in academic medicine has become a common topic of discussion in the lay press and within scientific literature. Women tend to have lower publication

numbers, academic rank, leadership positions, and pay scales.¹⁻⁶ Efforts to narrow these gaps have reduced explicit discrimination, but implicit gender bias may persist. Few articles concerning the public's possible implicit bias regarding surgeon gender have been published in the plastic surgery literature.

Gender bias may arise from a multitude of factors, including cultural traditions societal expectations, and adapted behaviors.² Social role theory suggests that we create gender roles for men and women based on specific traits and characteristics associated with traditional roles men and women have held in the workplace.⁷ Isaac et al.⁷ state that "agentic" features, more typically associated with men, reflect strong leadership qualities, such as confidence, toughness, dominance, and assertiveness.

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The “communal” features typically associated with women manifest a concern for the wellbeing of others through helpfulness, kindness, sympathy, and gentleness.⁷

Patient preferences regarding physician gender have been examined in fields ranging from primary care to subspecialties such as orthopedics and urology.^{8–10} A prospective study of 200 consecutive plastic surgery patients, all of whom were women, found that most patients had no preference for a particular surgeon gender.¹¹ Of the 27% expressing a preference, the majority preferred a female surgeon. Dusch et al.¹² analyzed perceptions of female surgeons in patients attending a primary care clinic. Patients considered a hypothetical scenario in which their mother was to have surgery for lung cancer or breast cancer. Each of the 8 scenarios described an accomplished, well-trained surgeon, differing only by gender, demeanor, and type of surgery. Overall, patients expressed no preference for a surgeon based on gender.

Bias may lead employers to hire men preferentially over women, despite identical application forms, and once hired, women may earn less for the same roles.¹³ One challenge in carrying out a study evaluating these issues is attracting a pool of survey respondents that represent the general public. However, such studies can now be accomplished through crowdsourcing, in which members of the public are asked to complete an online task for small, financial reimbursement. Crowdsourcing has been used in the medical literature to assess surgical skill, public opinion regarding aesthetic outcome of reconstructive surgery, and reasons people seek out a particular plastic surgeon, such as experience, testimonials, or patient photographs.^{14–16}

Using Dusch’s study as a model, this investigation uses crowdsourcing to better understand the public’s perception of plastic surgeons. The aim of this study was to perform a focused analysis of whether the public prefers a specific gender or demeanor when considering plastic surgeons.

METHODS

Members of the public were surveyed via the Amazon Mechanical Turk Crowdsourcing platform (www.mturk.com). Crowdsourcing is a method of generating data where members of the public complete an online task for a small monetary fee, allowing users to outsource tasks to a large number of people.

Inclusion criteria were those over 18 years of age who had completed more than 5,000 human intelligence tasks (HITs). A HIT is a single, self-contained task completed by a human, rather than computer, in return for payment; only respondents who had obtained a HIT approval rating of greater than 95% were included, to increase the quality of responses.¹⁷ No restrictions were placed on gender, race, or geographic location.

Respondents read 1 of the 8 randomly assigned scenarios adapted with permission from Dusch et al.¹² and created using SurveyMonkey Inc. (San Mateo, Calif., www.surveymonkey.com; see document, **Supplemental Digital Content 1**, which displays the discussed scenarios, <http://links.lww.com/PRSGO/A759>).¹² The original

questions in Dusch’s study were developed based on the work by Rudman et al.¹⁸ in 2012, who developed 6 online surveys asking respondents to rank 64 traits related to “gender typicality.” From these, the authors determined which traits were “male prescription” and “female prescription.”

In addition to demographic questions on age, gender, race, continent of residence, and education level, each respondent was presented with a scenario in which the respondent’s mother needed surgery to be performed by a specific surgeon. In all scenarios, the surgeon was portrayed as accomplished and well trained, with low complication rates. The surgeons described in the scenarios differed only by gender (male or female), personality, with some being agentic (a more traditionally male demeanor) and other being communal (a more traditionally female demeanor), and type of surgery (breast cancer reconstruction or lower limb trauma reconstruction). Respondents rated their surgeon on competence, skills, leadership qualities, likeability, worthiness of respect, trustworthiness in reporting an error, and whether they would ultimately choose them to perform the surgery, using a 5-point Likert scale: Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree and Strongly Agree. “Check questions” were utilized to assess the level of respondents’ attention throughout the survey. Respondents who failed the check questions were excluded from subsequent analysis.¹⁷ Incomplete responses and multiple entries from the same worker were excluded.

Statistical Analysis

Statistical analyses were performed using IBM SPSS version 22.01 for Mac (IBM Corp., Armonk, N.Y.). Responses were converted to numeric values (1–5) and presented as mean response score per Likert item (higher numbers indicating a more positive result) with SD. Mean Likert item responses by subgroup were compared using the independent *t* test, including surgeon gender, surgeon demeanor, surgeon gender and demeanor in combination, type of surgery, and respondent gender. The impact of respondent age was analyzed using ordinal regression. Significance was taken when $P < 0.05$. Before undertaking the study, a sample size calculation was performed based on the results presented by Dusch et al.¹² to determine the minimum sample size required to detect statistically significant differences with a power of 80%.

RESULTS

The sample size calculation determined a need for 341 responses and so data from 341 respondents were retrieved over the study period. Of these, 55.7% were male, 45.5% white, 54.8% resided in North America, and 55.1% had completed at least higher education (Table 1).

Whole-group Analysis

There were no significant differences between male and female plastic surgeons in perceived competence ($P = 0.315$), skills ($P = 0.057$), likeability ($P = 0.057$), leadership ($P = 0.987$), how much the respondent would

Table 1. Respondent Demographics

Demographics	Mean (SD)/n (%)
Age (y)	36.2 (±11.1)
Gender	
Female	150 (44)
Male	190 (55.7)
Queer	1 (0.3)
Race	
White	155 (45.5)
Asian	143 (41.9)
Black	16 (4.7)
Hispanic	17 (5.0)
Mixed	6 (1.8)
Other	4 (1.2)
Continent of residence	
North America	187 (54.8)
South America	11 (3.2)
Asia	125 (36.7)
Europe	10 (2.9)
Africa	6 (1.8)
Australia	2 (0.6)
Education level	
Further education*	120 (35.2)
Higher education†	188 (55.1)
School age 17–18	28 (8.2)
School age 12–16	5 (1.5)

N = 341.

*Further education = graduate school after university/college.

†Higher education = after age 18 (university/college).

Table 2. Perceived Characteristics by Surgeon Gender and Surgeon Demeanor (Mean Likert Score with SD)

Characteristics*	By Gender (n = 341); 1 = Male, 2 = Female		By Demeanor (n = 341); 1 = Agentic, 2 = Communal	
	Mean ± SD	P	Mean ± SD	P
Competent		0.315		0.293
1	4.49 ± 0.61		4.49 ± 0.54	
2	4.43 ± 0.58		4.42 ± 0.64	
Skills		0.057		0.175
1	4.60 ± 0.59		5.57 ± 0.54	
2	4.48 ± 0.59		4.49 ± 0.64	
Like		0.057		< 0.001
1	4.31 ± 0.77		4.08 ± 0.78	
2	4.15 ± 0.77		4.39 ± 0.73	
Leader		0.987		0.519
1	4.31 ± 0.77		4.33 ± 0.68	
2	4.31 ± 0.67		4.28 ± 0.75	
Respect		0.190		0.742
1	4.48 ± 0.66		4.42 ± 0.63	
2	4.39 ± 0.67		4.44 ± 0.71	
Choose		0.166		0.426
1	4.45 ± 0.71		4.36 ± 0.69	
2	4.35 ± 0.69		4.43 ± 0.71	
Error		0.584		0.105
1	4.24 ± 0.87		4.28 ± 0.75	
2	4.19 ± 0.78		4.13 ± 0.90	

*Competent = perceived competence; Skills = perceived possession of skills necessary for the job; Like = how much the respondent would like the surgeon; Leader = perceived possession of leadership qualities; Respect = how much the respondent would respect the surgeon; Choose = how likely the respondent is to choose the surgeon to perform this surgery; Error = perceived likelihood of surgeon disclosing an error that occurred during surgery. Bold depicts statistical significance at $p < 0.05$.

respect the surgeon ($P = 0.190$), choose them to perform the surgery ($P = 0.166$), or trust them to report an error ($P = 0.584$), respectively (Table 2).

Surgeons with a communal demeanor were perceived as more likeable ($P < 0.001$), though there were

Table 3. Perceived Characteristics within Breast and Trauma Reconstruction Groups by Surgeon Gender (Mean Likert Score with SD)

Characteristics	Breast		Trauma	
	Mean ± SD	P	Mean ± SD	P
Competent		0.967		0.996
Male surgeon	4.46 ± 0.64		4.46 ± 0.64	
Female surgeon	4.46 ± 0.58		4.46 ± 0.58	
Skills		0.109		0.109
Male surgeon	4.62 ± 0.61		4.62 ± 0.61	
Female surgeon	4.47 ± 0.60		4.47 ± 0.60	
Like		0.054		0.054
Male surgeon	4.34 ± 0.74		4.34 ± 0.74	
Female surgeon	4.11 ± 0.81		4.11 ± 0.81	
Leader		0.520		0.520
Male surgeon	4.39 ± 0.73		4.39 ± 0.73	
Female surgeon	4.33 ± 0.65		4.33 ± 0.65	
Respect		0.157		0.157
Male surgeon	4.50 ± 0.70		4.50 ± 0.70	
Female surgeon	4.36 ± 0.59		4.36 ± 0.59	
Choose		0.119		0.119
Male surgeon	4.49 ± 0.74		4.49 ± 0.74	
Female surgeon	4.32 ± 0.68		4.32 ± 0.68	
Error		0.939		0.939
Male surgeon	4.18 ± 0.91		4.18 ± 0.91	
Female surgeon	4.17 ± 0.83		4.17 ± 0.83	

*Competent = perceived competence; Skills = perceived possession of skills necessary for the job; Like = how much the respondent would like the surgeon; Leader = perceived possession of leadership qualities; Respect = how much the respondent would respect the surgeon; Choose = how likely the respondent is to choose the surgeon to perform this surgery; Error = perceived likelihood of surgeon disclosing an error that occurred during surgery.

no differences in perceived competence ($P = 0.293$), skills ($P = 0.175$), leadership ($P = 0.519$), respect for the surgeon ($P = 0.742$), likelihood to choose them as their surgeon ($P = 0.426$), or trust them to report an error ($P = 0.105$).

When evaluating type of surgery (breast or lower limb reconstruction), there were no significant differences in any domain assessed when analyzing by surgeon gender (Table 3).

Subgroup Analysis

The subgroup analysis is summarized in Table 4. When isolating scenarios by surgeon gender, female plastic surgeons exhibiting communal characteristics were perceived as significantly less competent ($P = 0.018$) and less skilled ($P = 0.019$) than those who were agentic, although they were also perceived as more likeable ($P < 0.001$). There were no other differences in perceived leadership ($P = 0.288$), respect for the surgeon ($P = 0.471$), likelihood of choosing them ($P = 0.995$), or trust they would report an error ($P = 0.218$). Within the male plastic surgeon scenarios, when analyzing surgeon demeanor, there were no significant differences in perceived competence ($P = 0.457$), skills ($P = 0.849$), likeability ($P = 0.079$), leadership ($P = 0.856$), how much the respondent would respect the surgeon ($P = 0.288$), choose them ($P = 0.358$), or trust them to report an error ($P = 0.243$).

There were no significant differences in the ratings awarded by female respondents across all domains when comparing male and female plastic surgeons. However, male respondents rated male surgeons as more competent ($P = 0.018$), more skilled ($P = 0.034$), and more

Table 4. Perceived Characteristics by Demeanor within Female and Male Surgeon Scenarios (Mean Likert Score with SD)

Characteristics	Female Surgeons (n = 188)		Male Surgeons (n = 153)	
	Mean ± SD	P	Mean ± SD	P
Competent		0.018		0.457
Agentic	4.51 ± 0.54		4.45 ± 0.56	
Communal	4.32 ± 0.61		4.52 ± 0.65	
Skills		0.019		0.849
Agentic	4.56 ± 0.55		4.59 ± 0.52	
Communal	4.36 ± 0.62		4.61 ± 0.64	
Like		0.001		0.079
Agentic	4.00 ± 0.77		4.20 ± 0.79	
Communal	4.37 ± 0.72		4.41 ± 0.74	
Leader		0.288		0.856
Agentic	4.35 ± 0.58		4.30 ± 0.80	
Communal	4.24 ± 0.78		4.32 ± 0.75	
Respect		0.471		0.288
Agentic	4.42 ± 0.60		4.42 ± 0.69	
Communal	4.35 ± 0.77		4.54 ± 0.63	
Choose		0.995		0.358
Agentic	4.35 ± 0.68		4.39 ± 0.71	
Communal	4.35 ± 0.70		4.50 ± 0.71	
Error		0.218		0.243
Agentic	4.25 ± 0.76		4.32 ± 0.73	
Communal	4.10 ± 0.82		4.16 ± 0.76	

*Competent = perceived competence; Skills = perceived possession of skills necessary for the job; Like = how much the respondent would like the surgeon; Leader = perceived possession of leadership qualities; Respect = how much the respondent would respect the surgeon; Choose = how likely the respondent is to choose the surgeon to perform this surgery; Error = perceived likelihood of surgeon disclosing an error that occurred during surgery.

likeable ($P = 0.042$) on average, and were also more likely to choose a male surgeon compared with a female surgeon ($P = 0.033$; Table 5).

Finally, results of the regression analysis showed that within the female plastic surgeon scenarios, age of respondent increased the likelihood of more positive responses in perceived competence ($P = 0.008$), while it did not affect perceived skills ($P = 0.193$), likeability ($P = 0.944$), respect for the surgeon ($P = 0.101$), leadership ($P = 0.355$), likelihood to choose the surgeon ($P = 0.096$), or perceived likelihood to report an error ($P = 0.545$). In contrast, within the male plastic surgeon scenarios, age of respondent did not impact perceived competence ($P = 0.629$), skills ($P = 0.297$), likeability ($P = 0.221$), respect for the surgeon ($P = 0.746$), leadership ($P = 0.363$), likelihood to choose the surgeon ($P = 0.876$), or perceived likelihood to report an error ($P = 0.378$; Table 6).

DISCUSSION

In this study, a large sample of lay individuals completed an online task rating a fictional plastic surgeon's perceived competence, skills, likeability, leadership, how much the respondent would respect the surgeon, choose them, and trust them to report an error. Overall, respondents rated both the female surgeon and the male surgeon similarly on all scales. However, subgroup analysis revealed that surgeon demeanor and respondent gender influenced the outcomes, suggesting the presence of implicit bias against female plastic surgeons who displayed more traditionally female ("communal") characteristics rather than those

Table 5. Perceived Characteristics by Surgeon Gender within Female and Male Respondent Groups (Mean Likert Score with SD)

Characteristics	Female Respondents (n = 150)		Male Respondents (n = 190)	
	Mean ± SD	P	Mean ± SD	P
Competent		0.203		0.018
Male surgeon	4.46 ± 0.58		4.52 ± 0.63	
Female surgeon	4.58 ± 0.55		4.31 ± 0.57	
Skills		0.731		0.034
Male surgeon	4.64 ± 0.54		4.57 ± 0.63	
Female surgeon	4.61 ± 0.54		4.37 ± 0.61	
Like		0.562		0.042
Male surgeon	4.29 ± 0.68		4.34 ± 0.83	
Female surgeon	4.21 ± 0.84		4.10 ± 0.71	
Leader		0.105		0.227
Male surgeon	4.33 ± 0.76		4.29 ± 0.77	
Female surgeon	4.51 ± 0.57		4.16 ± 0.70	
Respect		0.796		0.072
Male surgeon	4.50 ± 0.61		4.47 ± 0.70	
Female surgeon	4.53 ± 0.57		4.28 ± 0.72	
Choose		0.600		0.033
Male surgeon	4.44 ± 0.63		4.46 ± 0.77	
Female surgeon	4.50 ± 0.69		4.23 ± 0.67	
Error		0.554		0.205
Male surgeon	4.26 ± 0.91		4.22 ± 0.84	
Female surgeon	4.34 ± 0.75		4.07 ± 0.79	

*Competent = perceived competence; Skills = perceived possession of skills necessary for the job; Like = how much the respondent would like the surgeon; Leader = perceived possession of leadership qualities; Respect = how much the respondent would respect the surgeon; Choose = how likely the respondent is to choose the surgeon to perform this surgery; Error = perceived likelihood of surgeon disclosing an error that occurred during surgery.

Table 6. Perceived Characteristics by Respondent Age within Female and Male Surgeon Scenarios

Characteristics*	Female Surgeons (n = 188)	Male Surgeons (n = 153)
	OR (95% CI), P†	OR (95% CI), P†
Competent	1.038	
Skills	(1.010–1.067), 0.008	1.007 (0.979–1.035), 0.629
Like	1.018	0.985 (0.957–1.013), 0.297
Leader	(0.991–1.045), 0.193	
Respect	1.001	0.984 (0.58–1.010), 0.221
Choose	(0.976–1.026), 0.944	
Error	1.012	1.013 (0.986–1.040), 0.363
	(0.987–1.038), 0.355	
	1.022	0.995 (0.968–1.023), 0.746
	(0.996–1.050), 0.101	
	1.022	1.002 (0.975–1.030), 0.876
	(0.996–1.049), 0.096	
	1.008	1.012 (0.985–1.040), 0.378
	(0.983–1.034), 0.545	

*Competent = perceived competence; Skills = perceived possession of skills necessary for the job; Like = how much the respondent would like the surgeon; Leader = perceived possession of leadership qualities; Respect = how much the respondent would respect the surgeon; Choose = how likely the respondent is to choose the surgeon to perform this surgery; Error = perceived likelihood of surgeon disclosing an error that occurred during surgery.

†OR = odds ratio; CI = confidence interval.

more often associated with men ("agentic"). In addition, older respondents were more likely to give positive ratings within female plastic surgeon perceived competence than younger respondents.

Previous studies have suggested that women may prefer female providers more often for intimate treatment,

such as obstetric, gynecological, endoscopic, and breast surgical care.^{19–23} Similarly, Amir et al.⁸ found that of male urology patients with a gender preference, a vast majority preferred a male physician. Tempest et al.²⁴ found that 80% of urology patients have no gender preference, and of those that did, 98% preferred a gender-concordant urologist. Most patients cited embarrassment as the primary determinant of their preference for a gender-concordant practitioner.^{11,24} Unlike those studies, respondents in this study were choosing a surgeon for their mother rather than for themselves, which may have reduced the potential for embarrassment, accounting for the lack of overall preference for male or female plastic surgeons.

Although, historically, the majority of surgeons have been male, the public may increasingly recognize the growing proportion of women, possibly explaining the absence of overall plastic surgeon gender preference.^{25,26} Instead other qualities may play a more important role when choosing a surgeon. Indeed, experience, especially in the procedure of interest, reputation, credentials, and method of referral have been shown to be important in surgeon choice by patients.^{11,27–30} In fact, Groutz et al.²² found that in patients preferring a gender-concordant physician, female breast clinic patients prioritized surgical ability, experience, and knowledge, whereas Amir et al.⁸ found male patients did the same when rating urology surgeons. Huis et al.¹¹ found that although patients who had a gender preference preferred a female, a majority of respondents asked for a surgeon by name, reinforcing the idea that reputation and experience may be most important when determining surgeon preference.

When considering demeanor, sociological studies have shown that women with more agentic qualities are more likely to ascend the career ladder and succeed in classically male-type fields.^{31,32} Our subgroup analyses support these findings, as female plastic surgeons with communal qualities were perceived as less competent and skilled than agentic females, yet demeanor did not affect male plastic surgeon skill and competency ratings. Historically, women with more “feminine” qualities have been felt to lack the more desirable male-type qualities seen as more conducive to successful leadership, putting women with more “feminine” qualities at a disadvantage.^{7,33} Conversely, although agentic qualities led to more favorable responses from potential patients’ family members, these same attributes have led to decreases in women’s likeability ratings and likelihood of being hired, and poorer interpersonal ratings by coworkers, among other “backlash effects” for counter-gender stereotypical behavior.³⁴ These cultural traditions and expectations of gender roles within medicine may shape female participation in the workforce.^{26,35}

Few other studies have considered physician demeanor and physician gender separately. In studies looking at gender alone, participants may have assumed females to be communal and males to be agentic, making it impossible to distinguish between preference for the demeanor or the gender of the physician. However, there is evidence that a surgeon’s demeanor may be more important to some patients than a surgeon’s gender. Dusch et al.¹² found that, regardless of surgeon gender, there was a significant

preference for communal demeanor among breast cancer surgery patients and agentic demeanor within lung cancer surgery patients. The authors suggested that breast cancer may be more psychologically and emotionally challenging, possibly better handled by a surgeon with a traditionally feminine, caring manner; while lung cancer may be viewed as a more serious, technically challenging “man’s disease.” In the present study, ratings of communal or agentic surgeons were not significantly different in limb reconstruction versus breast reconstruction scenarios. The difference between our results and those of the previous study may lie in the populations surveyed: Dusch et al.¹² investigated a single primary care facility, whereas ours was an international cohort of people, not necessarily patients, who may have had fewer preconceived ideas about breast or trauma surgery and the potential need for a particular demeanor.

Importantly, the decrease in ratings of skill and competence in communal female surgeons, found on subgroup analysis, did not extend to decreased levels of respect or a lower likelihood to choose them as a surgeon in the whole-group analysis. However, subgroup analysis of respondent gender revealed that male respondents rated female surgeons as less competent, skilled and likeable, and they were less likely to choose a female surgeon. Moss-Racusin et al.¹³ found that when presented with identical application forms differing only by gender, employers were more likely to hire males than females, offering the males more career support and higher starting salaries. Files et al.³⁶ demonstrated that female physicians were more likely to be called by their first name than males, perhaps reflecting a lower perceived expertise and authority of the female physicians. The present study underlines the persistence of some elements of gender bias; with patients demonstrating flexibility in choice of health care providers, female plastic surgeons may consider marketing strategies to change perceptions. Plastic surgery societies may consider creating opportunities for women surgeons to appear in more publically orientated roles, and rise to leadership positions. Moreover, since our findings indicated that increasing age of respondent was associated with a greater likelihood of rating female plastic surgeons as more competent, female plastic surgeons may consider efforts to target possible perceptions of lower competence among younger patients.

Moving forward, women plastic surgeons should consider ways of demonstrating their proficiency and expertise to the public. Social media may provide a useful channel through which plastic surgeons can promote discussion and education with other health care professionals and the wider public.³⁷ Workshops supporting women may help women plastic surgeons engage with the public. Indeed, social media and marketing was the theme of the 2017 Women Plastic Surgeons annual Enrichment Retreat.³⁸ Moreover, in a recent Twitter movement, women surgeons posted photographs of themselves wearing surgical scrubs accompanied by the hashtag, “#ILookLikeASurgeon” to raise awareness of women in surgery.³⁹ Plastic surgery bodies may look to spearhead such campaigns in the future to increase positive visibility of women in plastic surgery.

Women may not be as good at self-promotion as men out of fear of appearing arrogant, lack of confidence in their abilities, or through the assumption that their achievements would be noticed without calling attention to them.^{32,40} To address this, senior team members can sponsor younger women and highlight their achievements and accomplishments. Workshops can help build confidence, assertiveness, and self-advocacy. An example is the “Graceful Self-Promotion” open panel session due to be hosted by the Association of Women Surgeons at the Academic Surgical Congress in 2018 (www.womensurgeons.org).³³ In addition, recognition awards within professional societies may serve to help advance women’s careers. Recent examination of 14 recognition award recipient lists from 7 specialties, including 4 surgical subspecialties, found underrepresentation of women physicians when compared with the distribution of women physicians in faculty positions within the fields.⁴¹ Within plastic surgery, 59 of 60 Honorary Citation Awards of the American Society of Plastic Surgery have been awarded to men.⁴²

In the present study, crowdsourcing enabled the evaluation of the perceptions of a large number of lay individuals’ views regarding plastic surgeon gender and demeanor. In the past, studies have relied on patients completing surveys while in medical offices or seeking health care, raising the possibility that respondents have preexisting opinions of providers based on prior experiences. Crowdsourcing offers unique access to a population less likely to be influenced by their own direct medical care. The results of this study suggest an influence of demeanor on perceived competence and skill level among women plastic surgeons. Men seem to be more likely to exhibit gender preferences than women regarding plastic surgeons. Raising awareness of these preferences or biases and considering ways to address them provides another stepping-stone toward achieving gender equality within plastic surgery.

Limitations

The limitations of this study include the contrived short narrative, which necessarily misses the nuances of auditory and visual cues; however, this served to avoid confounding factors and provide a more focused analysis. Furthermore, the quality of data produced by crowdworkers may be subject to bias resulting from capturing responses from participants willing to complete such tasks for a small fee, possibly limiting the validity of such research investigations.⁴³ To minimize this bias and improve validity, this study restricted respondents to workers with a high HIT rating and included attention tasks to decrease random answers, an approach that has been effective in previous work.¹⁷ Respondents were also asked to repeat the subject of the study, increasing internal validity. Other studies have shown that crowdworkers responses match expert opinions in multiple arenas.^{14,15} Finally, statistical significance in differences were small, and statistical significance may not always translate into clinical significance. Nonetheless, this study highlights the persistence of implicit bias among the public, and the need for women plastic surgeons to know how to address it.

CONCLUSIONS

A large sample of crowdsourced data demonstrated no difference in perceived surgeon competence, skill, likeability, leadership, how much the respondent would respect the surgeon, choose them, and trust them to report an error based on whether the plastic surgeon was male or female. However, female surgeons with a communal demeanor were rated as less competent and less skilled than those with an agentic demeanor, while demeanor did not affect how male plastic surgeons were perceived. Plastic surgeons may consider ways to emphasize the importance of communal characteristics within the specialty, and women plastic surgeons may seek to develop strategies for meaningful engagement with the public.

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